Colburn 16

THE IMPORTANCE OF PLACE AND THE SUBSTITUTABILITY OF RIVER RECREATION RESOURCES: EMPIRICAL EVIDENCE FROM THE CHATTOOGA WILD & SCENIC RIVER

Erik A. Backlund
Park Planning & Policy Laboratory
Department of Recreation, Sport & Tourism
University of Illinois at Urbana-Champaign
104 Huff Hall, 1206 South Fourth St.
Champaign, Il 61820

Abstract

For managers seeking to allocate recreation opportunities across the landscape, the importance of specific places in relation to their substitutability for recreation purposes is an important consideration. The purpose of this research was to examine the empirical relationship between place attachment and resource substitutability. It is hypothesized that increased place attachment decreases resource substitutability. Data were collected from trout anglers and whitewater boaters who used the Chattooga National Wild & Scenic River in 2000. Results supported the hypothesized relationship. Negative and significant correlations were found between the place attachment variables and measures of substitutability. Associations were found to be strongest between place dependence and the resource substitutability, especially the number of substitutes for both user groups. The more attached these recreationists were to the Chattooga, the fewer substitutes they had and those alternatives were considered of lower quality. Implications for regional carrying capacity assessment are discussed.

1.0 Introduction

Participants in wildland recreation activities like trout angling or whitewater boating develop preferences for specific settings which might be limited in a regional context. As a result of the limited nature of these resources, recreationists form emotional and functional attachments to these places. This attachment then may make alternative resources seem less suitable for the activity or the experience will be perceived as being of lower quality. In regional carrying capacity assessments, the relationship between the importance of place and the substitutability of resources is an important indicator of the social value of a place (Cole 2001; McCool & Cole 2001).

The relationship between the importance of place and the substitutability of recreation resources should be of interest to resource managers for two main reasons. First, this relationship is important because it can be a metric of the uniqueness of a particular resource in its larger regional context. Second, in a social impact assessment, the strength of this relationship would suggest when and for whom mitigation actions would be needed if management actions that lead to displacement of some users were taken.

Past research has alluded to the relationship between place attachment and resource substitutability but none have investigated it directly. The purpose of this research was to examine the empirical relationship between resource substitutability and place attachment. It is hypothesized that the substitutability of recreation resources will decrease as place attachment increases. Empirically, negative correlations are expected between measures of place attachment and measures of substitutability. Based on the findings implications of this relationship for management and regional carrying capacity assessments will be developed.

2.0 Background

Resource substitutability refers to the interchangeability of recreation resources so that equivalent outcomes can be achieved with minimal loss of satisfactions (Brunson & Shelby 1993; Hendee & Burdge 1974). The promise of substitutability research was that if activities or settings that substitute for other activities or settings could be identified, then displacement effects due to the scarcity of opportunities could be mitigated by directing recreationists to alternative activities or settings (Manning 1999). Substitutability's logic from rational choice theory suggests that sites with similar setting attributes could provide similar experiences. Research on the substitutability of recreation resources did not bear this out.

Two analyses indicated that resources with similar attributes were either not perceived as substitutes or were

perceived to offer lesser experiences. In a study of anglers in Green Bay, WI anglers were shown to be less likely to recreate on Lake Michigan despite the similarity of the opportunities (Ditton, Goodale, & Johnsen 1975). Later, Shelby and Vaske (1992) found that salmon anglers in their study of tradeoffs made when a substitute was chosen found that rivers or stream that had similar site attributes were not perceived to be of equal quality as compared to the angler's preferred river. They described angler's quality perceptions of their substitutes as "asymmetric." The question then remained to be asked, what accounts for this asymmetry?

One explanation for the asymmetrical perceptions substitutes could be that because the substitute lacks the meanings as the preferred river or stream, the same quality experience cannot be found at the substitute. Research on resource substitutes have generally started with two assumptions: 1) that settings are a collection of attributes that recreationists choose to fit their experiential needs, what Williams et al. (1992) coined the "commodity metaphor"; and 2) that leisure behaviors like fishing are goal-directed behaviors. In their critique, Williams et al. (1992) suggest that the multi-attribute approach is limiting because it treats settings as "means rather than ends" (p.30). In an alternative view leisure is process of meaning production and settings are meaning centers (Tuan 1974) the psychological outcome is the experience of affect toward a place. Place attachment theories suggest that over time and with increased exposure recreationists form emotional and functional bonds with a specific resource (Hammitt, Backlund, & Bixler 2003; Moore & Graefe 1994).

Research on place attachment has sought to relate the strength of emotional and functional attachments to recreation behavior measured by place identity and place dependence (Williams & Vaske 2003). Place identity is an emotional attachment often defined as a "substructure of the self-identity of a person consisting of broadly conceived cognitions about the physical world in which the individual lives" (Proshansky, Fabian, & Kaminoff 1983, p.59). Place dependence measures a person's functional attachment to place and is based on an individual's or group's assessment of the quality of a place and the relative quality of alternative places for the same activity. The degree of dependence is a function of the individual or group's awareness and familiarity with alternatives, mobility, and specificity of the place required (Stokols & Schumaker 1983).

Research on place attachment has tangentially addressed the relationship between place attachment and substitutability. Results of this research have suggested that the greater an individual is attached to a resource, the less willing they are to make a substitution. Williams et al. (1992) found that willingness to substitute was associated with lower place attachment scores among wilderness recreationists. Residents of the Svalbard Archipelago with strong senses of place were found to be less likely displaced from their recreation patterns by social and environmental change than residents with weaker senses of place (Kaltenborn 1998).

3.0 Participants and Procedures

3.1 Sample and Data Collection

Participants for this study were drawn from two user groups of the Chattooga National Wild & Scenic River, trout anglers and whitewater boaters. Trout anglers were drawn from members of the Rabun and Chattooga chapters of Trout Unlimited (TU). These two chapters geographically encompass the Chattooga and many of their activities are directed toward the protection and restoration of the Chattooga watershed. Combined, the two chapters have about 300 individual members. Whitewater boaters were drawn from a stratified random sample of whitewater boaters who completed self-administered permits in 2000. Sample stratification represented river use by month.

Data were collected following a modified Dillman method (1999). Two hundred ninety-two TU members and 447 whitewater boaters were sampled. Two hundred three total questionnaires were returned from the TU members for an adjusted response rate of 71 percent. From the whitewater boaters, 242 questionnaires were returned for an adjusted response rate of 64 percent.

3.2 Measures and Analysis

Substitutability- The substitutability of alternative rivers or streams for the Chattooga, were assessed using two measures. Study participants were asked to report the

number of alternative rivers they felt would provide a similar experience as participating at the Chattooga. Then, participants were asked to name a river in the Southeastern United States they thought was the best substitute for the Chattooga. They were then asked to rate the equivalence of their best substitute as compared to the Chattooga on a scale of 1 to 7 where 1="Not as good", 4="equivalent", and 7="better."

Place Attachment- Place attachment was assessed using the place identity and place dependence scales validated by Williams and Vaske (2003). The scales assess each construct with six items measured on a 5-point summative scale with Likert-type anchorings. Scale scores were derived from scale means and exhibited acceptable reliability for both groups with Cronbach's alphas ranging from .85 to .90.

Analysis- To analyze the data, two sets of associations between the place attachment scales and substitutability were tested. Correlations were calculated for both the TU member and whitewater boaters between the place attachment variable and the number of substitutes as well as between the place attachment variables and the best substitute equivalence ratings. To ensure parsimony, analysis did not go beyond correlations. All calculations were performed using SPSS 10.1.

4.0 Results

The substitutability variables exhibited substantial variation, TU members named 40 different rivers and the Whitewater boaters named 37 different rivers they perceived as substitutes for the Chattooga. Overall whitewater boaters had fewer substitutes and were more likely to perceive their substitute to be of lower quality as compared to the Chattooga than the TU members. About 14 percent of the TU members and 44 percent of the whitewater boaters reported having no substitutes. The mean number of substitute reported by the TU members was 5.89 and 1.84 for the whitewater boaters. For the TU members, the modal number of substitutes reported by 20 percent of the respondents was two. Zero substitutes was the mode for the whitewater boaters (43%) (Table 1). TU members tended to rate their named substitutes similarity as "equivalent" or above in the direction of "Better." The whitewater water boaters tended rate their substitute as "equivalent" or below (Table 2).

Table 3 summarizes the levels of place attachment for the TU members and whitewater boaters. The degree of place attachment was generally lower for the TU members as compared to the whitewater boaters, although the TU members exhibited greater variation in attachment as indicated by the larger standard deviations. Overall, the place identity was stronger than place dependence.

The hypothesis driving this research was that place attachment is negatively associated with the substitutability to recreation resources. Correlations were calculated between place identity and the number of substitutes, place identity and the equivalence ratings, place dependence and the number of substitutes, and place dependence and the equivalence ratings for both the TU members and the whitewater boaters (Table 4). As hypothesized, correlations were statistically significant and negative, except for the relationship between place identity and the number of substitutes for the whitewater boaters (r = -.06, p. =.455). The strength of the associations was generally stronger between place dependence and the substitutability variables than between the place identity and the substitutability variables. Overall the strongest relationships were between place dependence and the similarity ratings, r = -.46 for the TU members and r = -.47 for the whitewater boaters.

5.0 Discussion

The objective of this research was to examine the relationship between place attachment and resource substitutability. Results lent mixed support for the hypothesis that as place attachment increases the substitutability of alternative resources decreases. Place attachment was show to be negatively associated with resource substitutability but the correlation between place identity and the number of substitutes was not significant for the whitewater boaters. For both the Anglers and the whitewater boaters, the place attachment variables were most strongly related to ratings similarity rating of the respondents' best substitutes. That is, as place attachment as measured by place identity and place dependence

Table 1.—The number of substitutes for the Chattooga reported by the trout anglers and whitewater boaters

	Trout Unlimited	Whitewater boaters
Number of substitutes	%[1]	%[2]
0	13.5	41.3
1	14.8	13.6
2	20.0	15.2
3	16.8	9.2
4	7.7	10.3
5	5.2	5.4
6	7.2	1.1
7+	14.8	3.7
Mean (Std. Dev.)	5.89 (14.45)	1.84 (2.32)
Range	100	12

[1] n =155, [2] n=184

Table 2.—Similarity ratings of substitutes for the Chattooga.

	Trout Unlimited	Whitewater boaters
Similarity rating	%[1]	%[2]
1 = Not as good	1.9	8.3
2	5.0	15.6
3	20.0	34.4
4 = Equivalent	27.5	25.6
5	15.0	8.3
6	19.4	5.6
7 = Better	11.3	2.2
Mean (Std. Dev.)	4.52 (1.50)	3.36 (1.35)

[1] n =160, [2] n=180; 1="Not as good," 4="Equivalent," 7="Better"

Table 3.—Place attachment ratings.

	Trout Unlimited		Whitewater Boaters	
Variables	Mean	Standard Deviation	Mean	Standard Deviation
Place Identity	3.51	.85	4.16	.67
Place Dependence	2.55	.78	3.52	.79

Table 4.—Correlations between place attachment variables and substitutability variables.

	Number of substitutes			Similarity rating of substitutes		
Place attachment	n	r	p	n	r	p
Trout anglers						
Place identity	154	-.18	.028	159	-.30	.000
Place dependence	159	-.25	.002	160	-.46	.000
Whitewater boaters						
Place identity	183	-.06	.455	179	-.22	.004
Place dependence	181	-.23	.002	177	-.47	.000

increased the anglers' and boaters' perceptions of the quality of their substitute in relation to the Chattooga decreased. Place dependence was more strongly associated with both substitutability variables than place identity. Give the theoretical underpinnings of place dependence, this finding is logical considering that place dependence is based on the individuals' assessment of their preferred place as compared to other places, in a sense it is itself a measure of the lack of substitutes a recreationist has for a particular place.

Several possibilities may account for insignificant correlation between place identity and the number of substitutes for the whitewater boaters but a significant one for the TU members. Two are technical issues of sampling and measurement and another is theoretical in nature.

Previously, it has been noted that in many place attachment studies there is an on-site sampling bias that inflates place identity and dependence ratings, reduces the variance, and attenuates correlations with other variables (Williams & Vaske 2003). This may be the case for the whitewater boaters who were drawn from onsite users where as the anglers were drawn from groups of potential users. Comparing the place identity ratings between the two groups, we find that they are higher with a smaller standard deviation for the boaters as compared to the anglers (Table 3) a pattern consistent with the different samples of the users. Therefore, because of the truncated variance among the boaters there is the possibility of a Type II error. Alternatively, one must ask if a Type I error was made with the anglers. Since some of the anglers had never been to the Chattooga, they possibly should have been excluded from the analysis because they threaten the validity and reliability of the findings. TU members who had not visited the Chattooga, caused their rating may be biased lower with greater variance than the whitewater boaters, making the correlation significant when it should not have been.

From a theoretical point of view, the statistically insignificant correlation between place identity and the boaters number of substitutes but a significant correlation for the TU members may reveal differences in each group's object of attachment. That is, the meanings from which the two groups interpret their attachment to the Chattooga may differ. For example, the boaters' attachment may be grounded in the Chattooga as a symbolic representation, while the TU members' attachment evaluated in the context of fishing experiences. Confirming this would require interpretive data that seeks to understand the meanings members of these two users groups express for the Chattooga.

6.0 Implications

For management purposes the findings presented here have a few implications for regional carrying capacity assessment. The purpose of regional planning efforts is to ensure a diversity of opportunities a region offers in such a way to maximize to total values and benefits that can be gained from the system. Managers of specific areas need to be aware of the resource they manage fits into the larger array of opportunities before making decisions that in aggregate lead to the homogenization and suboptimalization of the entire system (McCool & Cole

2001). The low number of substitutes and the high levels of attachment among the whitewater boaters suggest that the Chattooga represents a fairly unique resource within the greater regional system. Alternatively, among the TU member the Chattooga is an option among an array of alternatives, some of which provide a better angling experience than the Chattooga experience. These findings may indicate that the Chattooga fills a niche for the whitewater boaters not found elsewhere in the region (i.e. a Wild & Scenic River relatively close to large population centers). Whereas for the TU members, the Chattooga may be a good place to fish near home, but not an optimal experience. In this example, identifying the Chattooga as unique resource serving a niche was fairly simple because it has a special designation. In systems that have many resources with special designations or with resources with no special designations, the relationship between place attachment and the substitutability of alternative resources among multiple user groups might indicate that a specific resource fills a niche for a certain user group(s). Applying data this way could help decisions makers better allocate experiences throughout the entire system because planner, managers and other stakeholders would have a reasonable basis for preferencing a particular user group or experience at a particular site that does not rely solely on current users' preferences for conditions (Stewart & Cole 2003). Rather, the value of a particular site can be understood in relation to alternative sites.

Making major management changes and decisions subject to NEPA analysis often requires estimating the impact of a management action on users. Accepting the tolerability of impacts implicitly requires deciding if the benefits of an action outweigh the costs. Understanding users place dependence to a resource in relation to the comparative quality of alternatives can be an indicator of whether an action will decrease the overall values and benefits of a regional recreation system. In this study, the relationship between place dependence and the similarity variable was moderately strong and negative. This indicates that the displacement of users with increasing dependence will be is accompanied by a loss in perceived quality of opportunities for these particular user groups throughout the system. Place dependence then offers a way to segment the proportion of users most likely to be negatively impacted by management actions that displace current users. Highly dependent users are the most likely to be negatively impacted if displaced or their use is limited. In this case, users with place dependence ratings one standard deviation above the mean for the whitewater boaters (PD=4.31+) or approximately 15.87 percent of the whitewater boaters and two standard deviations for the TU members (PD=4.11+), or approximately 2.28 percent of the TU members could be the most impacted in terms of a loss in perceived quality if displaced.

7.0 Conclusion

In conclusion, results presented here provide evidence to suggest that increasing attachment to a particular recreational resource reduces the substitutability of alternative resources. TU members were shown to have fewer substitutes and their substitutes were shown to be perceived as being of lower quality as compared to the Chattooga and levels of place attachment increased. Whitewater boaters generally followed this pattern except in their relationship between place identity and their number of substitutes. This research has informed research into place attachment by suggesting that, the threat to the validity and reliability findings by an on-site sampling bias is context dependent. Finally, it has been demonstrated that the relationship between place attachment and the substitutability of recreation resources can be important metrics in regional carrying capacity assessments.

8.0 Citations

Brunson, M.W., and Shelby, B. 1993. **Recreation substitutability: A research agenda.** Leisure Sciences. 15: 67-74.

Cole, D.N. 2001. **Visitor use density and wilderness experiences: A historical review of research.** In, W.A. Freimund and D.N. Cole, comps. Visitor use density and wilderness experience: Proceedings. (USDA, Forest Service, RMRS-P-20, pp. 11-20.) Fort Collins, CO: Rocky Mountain Research Station.

Ditton, R.B., Goodale, T.L., and Johnsen, P.K. 1975. **A cluster analysis of activity, frequency, and environment variables to identify water-based recreation types.** Journal of Leisure Research. 7(4): 282-295.

Hammitt, W.E., Backlund, E.A., and Bixler, R.D. 200X. **Experience use history, place bonding, and resource substitution of trout anglers during recreation engagements.** Journal of Leisure Research. 36(3): 356-378.

Hendee, J.C., and Burdge, R.W. 1974. **The substitutability concept: Implications for recreation research and management.** Journal of Leisure Research. 6: 157-162.

Kaltenborn, B. 1998. **Effects of place on responses to environmental impacts.** Applied Geography. 18(2): 169-189.

Manning, R.E. 1999. **Studies in outdoor recreation: Search and research for satisfaction.** Corvallis, OR: Oregon State Press.

McCool, S.F., and Cole, D.N. 2001. **Thinking and acting regionally: Toward better decisions about appropriate conditions, standards, and restriction on recreation use.** The George Wright Forum. 18(3): 85-98.

Moore, R.L., and Graefe, A.E. 1994. **Attachment to recreation settings: The case of rail-trail users.** Leisure Sciences. 16: 17-31.

Proshansky, H.M., Fabian, A.K., and Kaminoff, R. 1983. **Place identity: The physical world and socialization of the self.** Journal of Environmental Psychology. 3: 57-83.

Shelby, B., and Vaske, J.J. 1991. **Resource and activity substitutes for recreation salmon fishing in New Zealand.** Leisure Sciences. 13: 21-32.

Stewart, W.P. and Cole, D.N. 2003. **On the prescriptive utility of visitor survey research: A rejoinder to Manning.** Journal of Leisure Research. 35(1): 119-127.

Stokols, D., and Shumaker, S.A. 1981. **People and places: A transactional view of settings.** In J. Harvey, ed. Cognition, social behavior, and the environment (pp. 441-488). Hillsdale, NJ: Lawrence Earlbaum Asssociates, Publishers.

Williams, D.R., Patterson, M.E., Roggenbuck, J.W., and Watson, A.E. 1992 **Beyond the commodity metaphor: Examining emotional and symbolic attachment to place.** Leisure Sciences. 14: 29-46.

Williams, D.R., and Vaske, J.J. 2003. T**he measurement of place attachment: Validity and generalizability of a psychometric approach.** Forest Science. 49(6): 830 - 840.

Citation:
In: Peden, John G.; Schuster, Rudy M., comps., eds. Proceedings of the 2005 northeastern recreation research symposium; 2005 April 10-12; Bolton Landing, NY. Gen. Tech. Rep. NE-341. Newtown Square, PA: U.S. Forest Service, Northeastern Research Station